



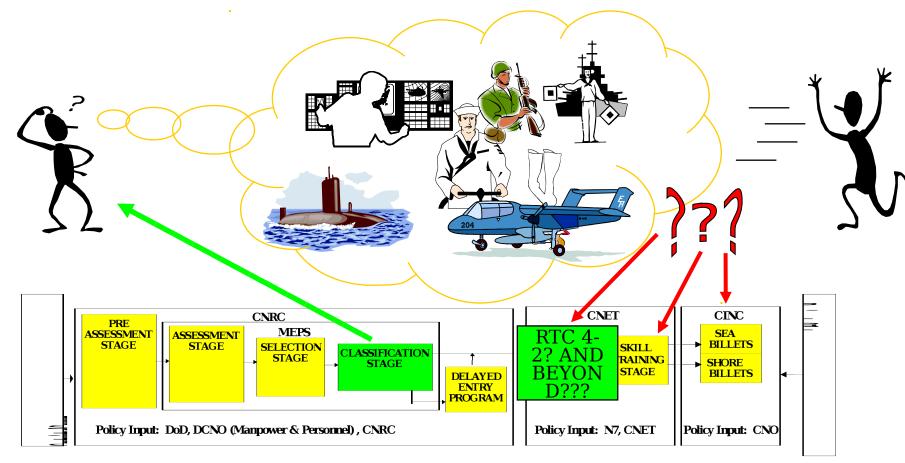
## **Briefing Outline**

- Project History
- Operational Problem
- Background/Objectives
- Software evolution
  - User-centered design
  - Capturing business rules
  - Architectural evolution
- Accelerated RIDE
- DSS Studies/Results



### **Focus on Classification**

The RIDE/JOIN project focuses on providing vocational guidance support for the classifier *and* the applicant-sailor during the classification stage of enlistment





## **Operational Problem**

- Navy classification process fails to encourage enlistment and combat attrition
  - Currently emphasize short-term recruiting quotas over Sailor-rating match
  - Does not consider job satisfaction/interest as key variables
  - Makes 20-30 year career decisions basical on 7 to 10 minute interview with Navy Classifier?





## **Background/Objective**

- RIDE-JOIN started as a 4-year proof-of-concept ONR 6.3 project in Oct 99 to develop and test improvement opportunities for Navy Selection and Classification
  - Develop a new classification algorithm (RIDE) flexible enough to accommodate new variables like applicant interest
  - Develop an interest inventory that could be used as input to the algorithm to modify the rank ordering of jobs offered to applicants
- Briefed to NHRBoD (ESC and full BoD)
  - Requested an accelerated plan
    - Plan provided and approved to develop in parallel the DSS (CNRC funded) and RIDE algorithms (ONR funded)
  - Funds received from CNRC for the DSS in Feb 00 and Jan 01
- Projects proceed in parallel with the critical convergence of the RIDE DSS and the RIDE algorithm in Jun 01
  - Produced a live-pilot test at San Diego MEPS after only 18 months





- Develop new classification algorithms
  - Considers First Pass Pipeline Success (FPPS) as training success measure
    - FPPS: Pass *entire* training pipeline, no setbacks
  - Reduces exaggerated "best" test score
    - Developed plateau relationship between training success and cut score, vice simple linear relationship
  - Penalizes for "over-qualification" of applicant
  - AFQT based for a given program/rating, to minimize resource "wastage"
  - Increases number of ratings applicant "optimally" qualified for
    - Increases number of ratings "tied" for the top of the list
- Develop an interest inventory that could be used as input to the RIDE algorithm to modify the rank ordering of jobs offered to applicants



## Background/Objective (cont.)

- Original Study (Watson & Folchi, 1999; Blanco, Shedlock & Watson, in review)
  - 1996-1998 Data had 18% FPPFs (First Pass Pipeline Failures) (\$59.8M)
  - RIDE red flagged 40% of FY96-98 FPPFs as misclassifications, identified better job match. Potential cost avoidance 40% \* 2390 Person Years = 956 Person Years (\$23.9M)
- Briefed to NHRBoD (ESC and full BoD)
  - Requested an accelerated plan
    - Approved plan was to develop in parallel the Decision Support System (DSS; CNRC funded) and RIDE algorithm (ONR funded)
- Projects proceed in parallel with the critical convergence of the RIDE DSS and the RIDE algorithm in Jun 01
  - Produced a live-pilot test at San Diego MEPS after only 18 months



### "Three Faces" of RIDE

- RIDE classification algorithms (ONR 6.3 funded)
  - Develop and validate new job classification algorithms
- □ RIDE DSS and interface (CNRC funded FY00-01)
  - Develop a flexible interface and decision support system for use by Recruiters, Classifiers, and enlisted applicants
- JOIN interest inventory development (ONR 6.3 funded)
  - Develop interest inventory that captures the breadth of Navy entry-level jobs and is comprehensible to naïve applicants

# **Summary of the Design Evolution**



#### NHRBOD ENDORSED S&C BPR

- IDENTIFY IMPROVEMENT OPPORTUNITIES FOR NAVY S&C
  - INTERVIEWED OVER 50 S&C Key Stakeholders (N1,N1B,CNET,CNRC,MCPON...)
- CROSS FUNCTIONAL TEAM ON PERS-1 CNRC, CNET, PSD-RTC,

#### RIDE DSS PROTOTYPE

- Rapid Prototyping (Millington, D.C., New Orleans)
  - Usability Testing (Pensacola)
  - Pilot Testing (MEPS San Diego)

Initial Classifica

Classification &

### **Protoype**

- **✓ REPLACE CLASP WITH RIDE**
- **ALGORITHMS**
- ✓ EMPHASIZE APPLICANT INTEREST
- ✓ PROVIDE MORE INFORMATION
- ✓ FOCUS TIME ON APPLICANT
- INTERACTION
- ✓ CENTRALIZE CONTROL AND ANALYSIS

Continuous Career Counseling

### **Navy S&C Testbed**

- RECLASSIFICATION (PSD-RTC)
- POINT OF SALE
- INTEREST MEASUREMENT
- ALGORITHM IMPROVEMENTS

Studies, & Technology



## RIDE DSS Development: User-Centered Design

- Phase I: Rapid Application Development (RAD)
  - April-July 2000
- Phase II: Iterative Rapid Prototyping
  - August-November 2000
- Phase III: Joint Application Sessions
  - December 2000-February 2001
- Phase IV: Laboratory usability sessions
  - March-April 2001
- Phase V: Live pilot test San Diego MEPS
  - July 2001-present

## User Centered Design PHASE I:NPRST Rapid Application Design

**Functional** Requirement Description

System Design Description

Architectu re/ Environme nt

Document



- Visual Basic -- Access DB
- Classifier and Control Analyst

Application

 Knowledge Elicitation and **Iterative Design Tool** 

April 2000 - July 2000

PERS CIO

CNRC

NRISO

**NPRST** 

**SABRE** 

ITC

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# User Centered Design PHASE II: NPRST Iterative Rapid Prototyping

- CNRC
- NRISO
- PRIDE SOURCE CODE
- PERS CIO

BUSINESS RULES

MENTAL QUALS

TOP 15

SHIP CYCLE QUOTAS

CUT SCORE EDITING

USER AUTHORITY SETTING

WAIVER SETTING

RIDE RAPID PROTOTYPE RIDE RAPID PROTOTYPE RIDE RAPID PROTOTYPE

- •Visual Basic-SQL Server DB
- •Classifier and Control Analyst

Application

Knowledge Elicitation /

►--- It<del>erative Design Tool</del> DESIGN TOOL CNRC 30, 33, 70 Deputy(D C)

PERS CIO

August 2000 - November 2000

# User Centered Design PHASE IMPRST Joint Application Design Sessions

(JADS)

BUSINESS

RULES

MORAL QUALS

(CLASSIFIER)

MORAL STDS.

(CTRIL/ANALYST)

STDS.

(CTRL/ANALYS

(CLASSIFIER) MEDICAL QUAL

- CNRC
- NRISO
- PRIDE SOURCE CODE
- N132

RIDE RAPID PROTOTYPE

RIDE RAPID PROTOTYPE

#### RIDE RAPID PROTOTYPE

- •Web Enabled SQL DB
- •Integrated Classifier and Control Analyst Application

DES SESSION 1

DES SESSION 2

**DESIGN SESSION 3** 

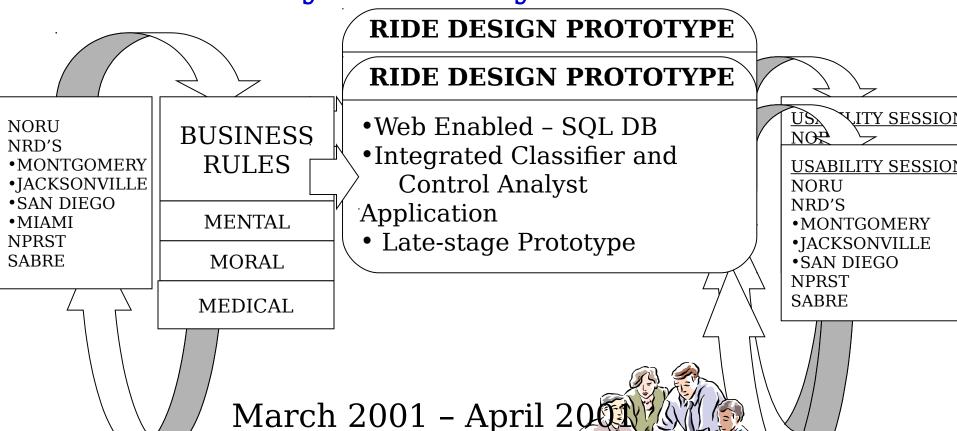
- •CNRC 33
- •NORU
- •C.O. SAN DIEGO
- •SENIOR CLASSIFI SAN DIEGO
- •NPRST
- SABRE

December 2000 - February 2001

Navy Personnel Research, Studies, & Technology

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# User Centered Design PHASE IWPRST Laboratory Usability Sessions



## User Centered Design PHASE V.NPRST Live Pilot Testing (10 July, 2001 to

Present)

**NRISO CNRC** SENIOR CLASSIFI MEPS CLASSIFIER **EPDS** SAN DIEGO NRD **STATISTICIAN** 

N132

BUSINESS RULES

**MENTAL** 

**MORAL** 

**MEDICAL** 

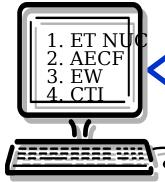
RIDE OPERATIONAL PROTOTYPE

- •Web Enabled SQL DB
- Integrated Classifier and Control Analyst

Application

- Interfaced with PRIDE
- •Can Use:
  - •Top 15
  - •RIDE Ranking
  - •CLASP Ranking

TOP 15 RIDE (OSG Preferences)



Navy Personnel Research, Studies, & Technology

PILOT STUDY GROU SAN DIEGO SENIOR CLASSIFIE MEPS CLASSIFIERS **EPDS** SAN DIEGO NRD **STATISTICIAN** 

# NPRST |

## RIDE DSS Recommendations and Operational Prototype

- Replacement for CLASP
  - RIDE ranking algorithms
- Replacement for OCEAN
  - User-centered design
  - Graphical user interface
- Replacement for most of ONBOARD functionality
  - walks applicant through job acceptance options and special requirements to make job reservation
- Application of all mental, medical and moral eligibility and waiver business rules for program/rating qualification
- On-line comparison of candidate attributes to job requirements
- Electronic review and approval of waivers

# NPRST

# RIDE DSS Recommendations and Operational Prototype, cont.

- Job ranking based on candidates' interest, aptitude, availability, and the needs of the Navy
  - Top 15 first, followed by RIDE or CLASP ranking (CNRC's choice)
- Job offerings emphasize classifier productivity and applicant interest
  - Displays 12 months of available jobs (both USN and USNR)
  - Displays special programs and OSGs
  - Permits classifier and candidate to specify OSGs and/or special programs
- Enlistment incentives displayed with job offerings
- Electronic job cards linked to job offerings (ECM website)
- On-line user maintenance of classification policies



# RIDE DSS Recommendations and Operational Prototype,

### cont.

- Incorporates business rules for RTC shipping capacity and CNRC area goaling
- Confirms job sale via interface with PRIDE
- Automatically creates and prints contract annexes, extensions, and statements of understanding
- Captures metric on meeting applicants job desires



### **RIDE DSS Studies**

- Usability Study (Completed 1 Apr 01, NORU, Pensacola FL)
  - 70% Reduction in required system interaction
    - more time vocational counseling, less system operations
  - 100% User acceptance
    - less repetitive tasks, more information
- Pilot Study (Began, 10 Jul 01, MEPS, San Diego, CA)
  - 100% Classifier acceptance
    - 100% Utilization (when possible) on Mission Day
  - 776 of 800 (97%) Applicants responded Yes to the question "Do you feel you got the job that you wanted?"



### **RIDE DSS Studies (Cont)**

- Satisfied respondents had better RIDE ranking than others
  - "Yes" respondents averaged 11 RIDE rank for booked job
  - "No" respondents averaged 17 RIDE rank for booked job
  - Software design supports emphasis on candidate's interests
  - RIDE algorithms encourage emphasis on candidate's interest
- Subject Matter Experts (SMEs; e.g., MEPS Senior Classifier) estimate 10 minute per interview savings
- Need an instrument to measure applicant interest structure prior to interview



### **RIDE Studies**

- Usability Study (Completed 1 Apr 01, NORU, Pensacola FL)
  - 70% reduction in required system interaction
    - more time vocational counseling, less system operations
  - 100% user acceptance
    - less repetitive tasks, more information
- Most Recent Algorithm Study (Zaki, Crookenden, Yeh, & Watson, 2001)
  - RIDE performance surpassed competing assignment algorithms (Shadow Pricing, Efficient Frontier, CLASP and actual Navy) using FY99-2000 data
  - Most important comparison: FPPS Unassigned
    - RIDE (no interest component) 85.8% 799
    - CLASP (existing Navy algorithm) 79.6% 3433



### RIDE Studies (cont.)

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  - 100% Classifier acceptance
    - 100% utilization (when possible) on Mission Day
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  - Satisfied respondents had better RIDE ranking than others
    - "Yes" respondents averaged 11 RIDE rank for booked job
    - "No" respondents averaged 17 RIDE rank for booked job
  - Subject Matter Experts (SMEs; e.g., MEPS Senior Classifier) estimate time savings provide an additional 10 minutes per interview



### **RIDE DSS Status**

- 11 Oct 01: CNRC, SITC, IBM, NPRST decided to adopt the RIDE algorithm, GUI, and functional characteristics as NRAMS functional requirements
- 26 Oct 01: CNRC, NPRST met and formally agreed to specific decisions on RIDE
  - RIDE algorithm will replace CLASP in NRAMS
  - RIDE DSS will replace other critical, initial classification components for NRAMS

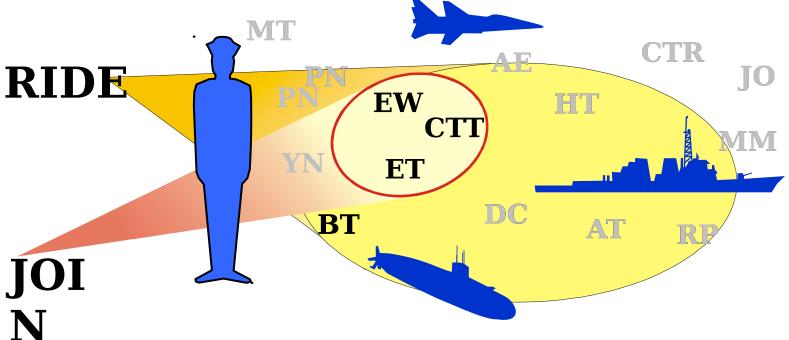
# Why JOIN? Jobs & Occupational Interests in the Navy



- Selection and classification decisions based on applicant preferences and interests lead to:
  - Less "buyer's remorse," greater job satisfaction, greater job performance, and lower turnover (civilian jobs)
- In addition, the Navy should expect ...
  - Fewer administrative and disciplinary problems
  - Lower first-term attrition
  - Greater second-term reenlistment



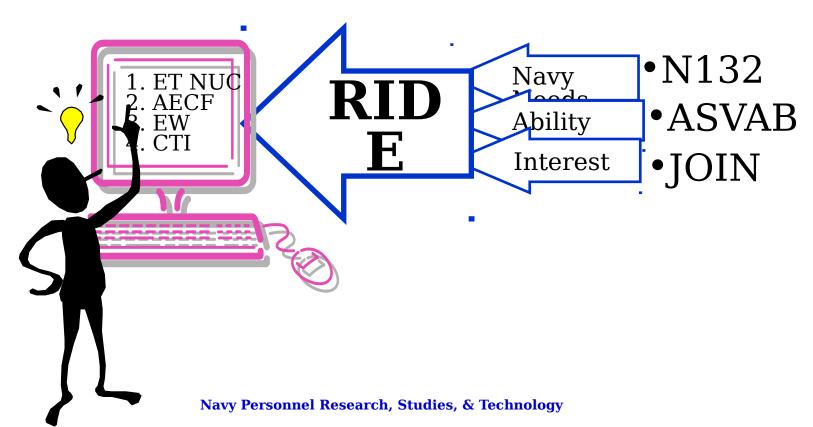
### **RIDE with JOIN**



- RIDE produces a limited list of ratings a person is qualified for and which
- I jane files her program/ratings a person is likely to be satisfied and interested in.



## **RIDE/JOIN**





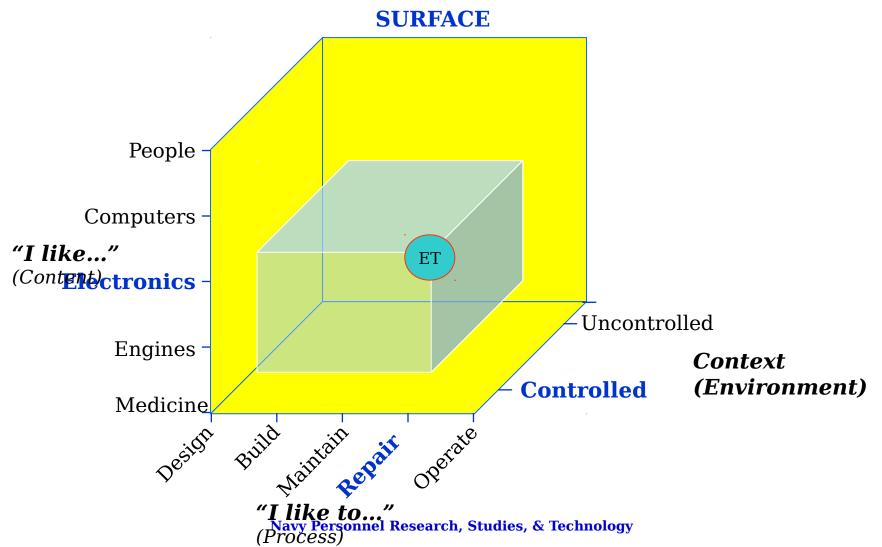
## **BACKUPS**

# JOIN Development: Jobs & Occupational Interests in

- the Navy Dismissed civilian and other interest measures
- Collected 100s of task statements and descriptions from Enlisted Community Managers on all entry level jobs
- Developed a broad descriptive model consisting of...
  - Community (e.g., submarine, aviation, surface)
  - Work environment (e.g., industrial, office, out-of-doors)
  - Content (e.g., customers, engines, media)
  - Process (e.g., design, repair, operate)
- Developed software to collect data that is appropriate for a naïve military job applicant to use
  - Data collection to begin in spring followed by additional modifications in the model and software

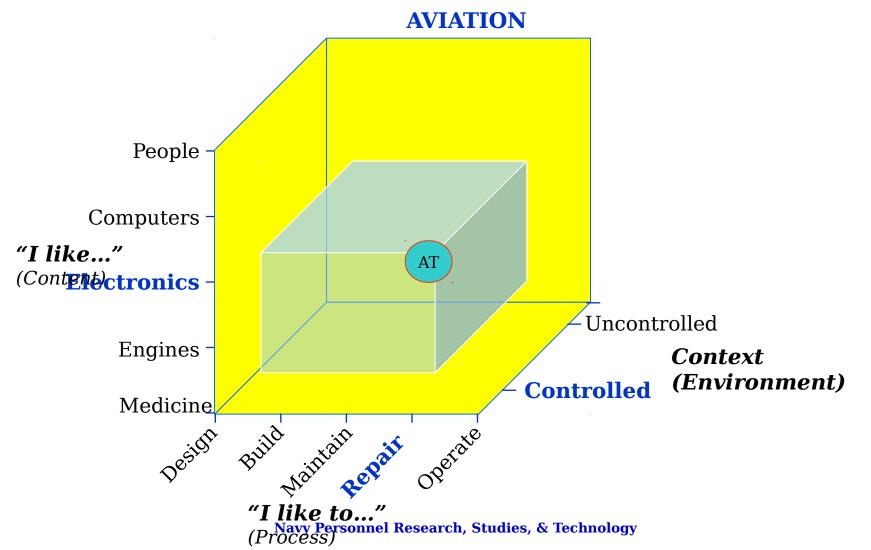


## **Context (Community)**





## **Context (Community)**



# NPRST

# Research Plan for Fiscal Year 2002

- (FNC Funded)
  RIDE Model Development, Testing and Validation
  - Continue data collection
  - Analysis and documentation
  - Iterative model refinement and validation
  - Investigate process and policy differences between initial classification and reclassification, as well as conversions
- JOIN Model Development
  - Develop dimensional models for all Navy ratings
  - Define Navy job groups/clusters
  - Develop dimensional models for job groups/clusters
  - Data collection on interest and job satisfaction
  - Determine how to integrate with RIDE model